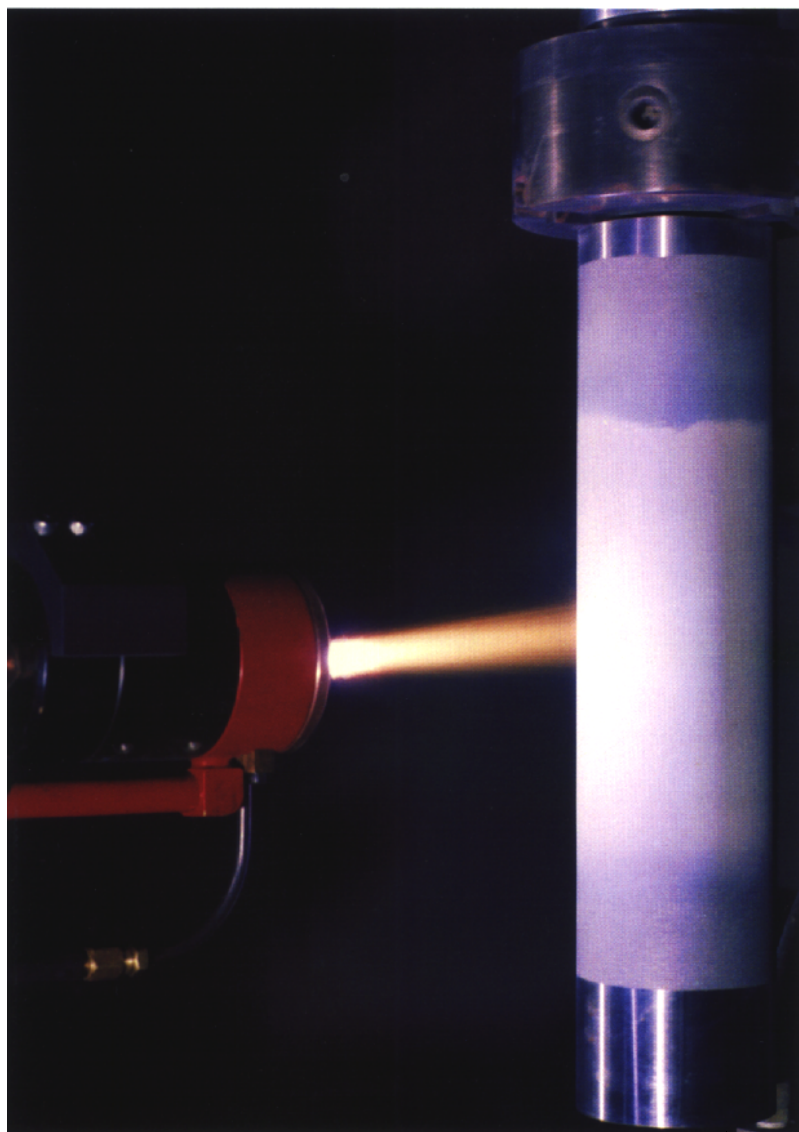


MATERIALS PREPARATION CENTER



Plasma arc spray coatings of quasi-crystalline powders have been applied to many types of metal surfaces for improved wear and corrosion resistance. Many potential applications for these high wear resistance coatings are found in transportation and manufacturing industries.

The Materials Preparation Center (MPC) at the Ames Laboratory, Iowa State University, is known for its unique capabilities for preparation, purification, fabrication, and characterization of pure metals and metal alloys and compounds. Established in 1981, MPC offers engineers and scientists a completely integrated facility for the preparation, characterization, and fabrication of research and prototype quantities of high purity metals, special alloys and compounds in a form and/or purity not available from commercial suppliers.

The Center consists of three sections:

- The Materials Preparation Section for the preparation of high purity rare earth and transition metals and alloys, single crystals, and atomized powdered metals and alloys;
- Chemical and spectrographic analyses using ICP-AES and laser ion mass spectroscopy, among other analytical techniques, are available from the Analytical Section;
- The Materials Referral System and Hotline Section provides requesters with information on the capabilities of U.S. government laboratories and industry to help researchers and engineers obtain materials and services critical to their research and development goals.

— ACCOMPLISHMENTS —

Developed plasma arc spraying of a new quasi-crystalline alloy composed of aluminum, copper, and iron for application to the wear surfaces on agricultural, automotive, rubber, and plastics industry components as a hard face coating.

Prepared rare-earth metal alloys for use in hydrogen absorption refrigeration, Ni/metal hydride batteries, and adiabatic nuclear demagnetization refrigeration – all technologies which provide environmentally conscientious alternatives for current environmental problems.

Developed rare-earth intermetallic single crystal magnetostrictive material for application in advanced acoustic devices such as sonar and cryovalves found in space exploration vehicles.